

BOSTON PUBLIC LIBRARY



3 9999 06544 678 1

THE COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF ANIMAL INDUSTRY

---

SEVENTH ANNUAL REPORT

OF THE

Commissioner of Animal Industry

---

NOVEMBER 30, 1918

No 6457.39



1918

GIVEN BY

The Commissioner





Digitized by the Internet Archive  
in 2013

---

SEVENTH ANNUAL REPORT

OF THE

COMMISSIONER OF ANIMAL INDUSTRY

---

FOR THE YEAR ENDING NOVEMBER 30, 1918



BOSTON

WRIGHT & POTTER PRINTING CO., STATE PRINTERS

32 DERNE STREET

1919

6457.39

The Commission  
May 24, 1919.

PUBLICATION OF THIS DOCUMENT  
APPROVED BY THE  
SUPERVISOR OF ADMINISTRATION.



# The Commonwealth of Massachusetts

---

DEPARTMENT OF ANIMAL INDUSTRY,  
BOSTON, Dec. 1, 1918.

*To the Honorable Senate and House of Representatives.*

In accordance with the provisions of section 4, chapter 608, Acts of 1912, I have the honor, as Commissioner of Animal Industry, to present the report of the Department's work for the year ending Nov. 30, 1918.

The Department of Animal Industry is charged with the duty of inspection and examination of animals within the Commonwealth; the quarantining and killing when necessary of animals affected with, or which have been exposed to, contagious disease; the burial or other disposal of their carcasses; the cleansing and disinfection of districts, buildings or places where contagion exists or has existed. It is also charged with the duty of tuberculin testing all neat cattle shipped from other States to Massachusetts, unless the same are intended for immediate slaughter, or are accompanied by a record of test made by a veterinarian approved by the live-stock official of the State from which they are shipped, and which record is accepted by the Commissioner on arrival of the animals.

The relation of live-stock keeping to agriculture is so intimate that the control and eradication of contagious diseases among farm animals become imperative and constitute an important economic factor in the material prosperity of many citizens of the Commonwealth. By limiting the spread of communicable diseases of animals by control methods, and inhibiting their development by preventive methods when possible, a certain effect on numbers is produced and there follows a consequent increase of the salable products derived from them. Fertility of the soil dependent upon live-stock keeping benefits by such

increased numbers, and general crop production therefore increases in a certain ratio to the increase in the number of animals produced and maintained in a healthy condition.

Our dependence upon domestic animals for food material further indicates the necessity of well-directed effort toward the suppression of contagious diseases among cattle, sheep and swine. When we consider that the carcasses of half a million animals are annually condemned in the United States as unfit for human food on account of the presence of extensive lesions of contagious disease, we may realize how important it is to limit in every way possible the prevalence of such disease in food-producing animals and thereby to reduce this great waste.

The work of the Department of Animal Industry bears an important relation also to the maintenance and protection of the public health by its activities in suppression of such animal diseases as are communicable to the human subject, namely, glanders, tuberculosis, rabies, anthrax, actinomycosis, etc. Any one of these diseases may be transmitted to persons if circumstances favorable to such transmission are present, and we find that a certain toll of human life is annually exacted by them.

Our work in supervision of the health of animals may therefore be classed as auxiliary to that of the public health service, and if efficient is of positive value to the general public welfare.

In accordance with the provisions of chapter 189, Acts of 1918, this report will consist of a brief summary of the year's work of the Department, with the addition, however, of a few charts covering the control work of recent years in some of the principal contagious diseases of animals with the prevalence of which we have to deal. In our opinion these charts will be of considerable interest to many who have been familiar with the workings of this Department during a period of years. They show the progress of the control work during different periods, and summarize the success of such policies as have been pursued for a length of time sufficient to conclusively prove the wisdom of their inauguration.



Following is a gross summary of the work of the Department for the year ending Nov. 30, 1918: —

#### CATTLE.

- 8,940 Massachusetts cattle were physically examined by Department agents.
- 583 Massachusetts cattle were tuberculin tested by Department agents.
- 17,492 Interstate cattle were tuberculin tested by Department agents.
- 1,083 Animals on 119 farms in 43 towns were given preventive treatment against blackleg.
- 133 Animals on 9 farms were given preventive treatment against anthrax.

#### HORSES.

- 1,540 Tests for glanders were made by Department agents.
- 4,425 Interstate horses were examined by Department agents.
- 40 Tests of whole stables were made by Department agents.

#### DOGS.

- 403 Dogs were examined by Department agents.

#### SWINE.

- 56,768 Head of swine were treated in prevention and cure of hog cholera.
- 5,653 Head of swine were treated in prevention and cure of hemorrhagic septicemia.

#### MISCELLANEOUS DISEASES.

- 191 Cases of miscellaneous diseases were investigated by Department agents.

#### BOVINE TUBERCULOSIS.

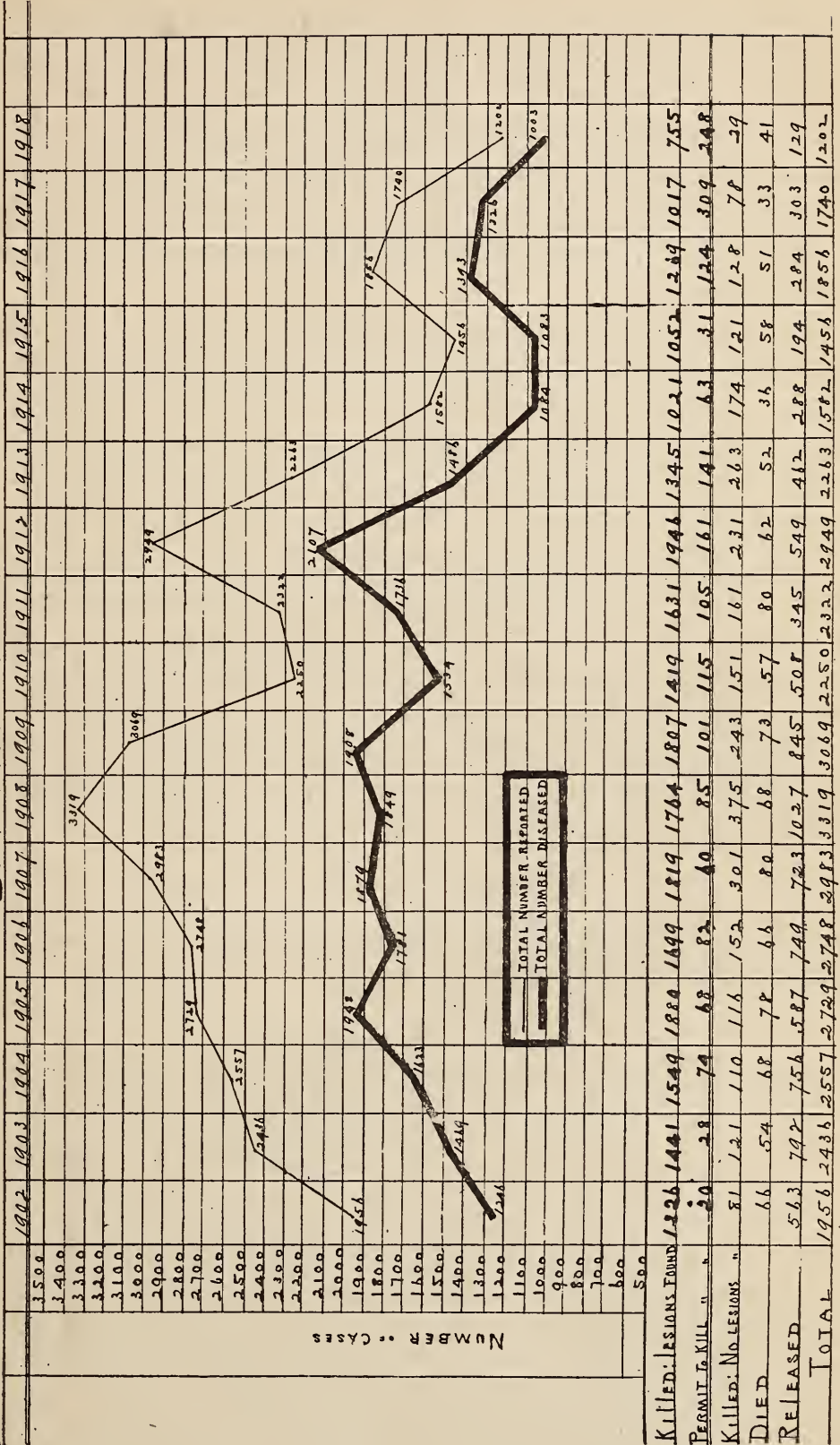
The control of tuberculosis in cattle is still one of our serious problems. It requires constant and faithful application of all available methods found by experience to be effective, and continuous study of conditions affecting the interpretation of the results obtained as a basis for future plans of procedure. New phases of the problem which from time to time appear, new methods recommended by recognized authorities, and new suggestions by our workers in the field, must be given due consideration.

The general policy which has been pursued by the Department for the past three years is still in operation. This policy

briefly stated is as follows: Tuberculin testing of all cattle arriving in Massachusetts from other States not accompanied by approved records of test, followed by slaughter of the reacting animals; annual examination by local inspectors of animals of all Massachusetts cattle and the premises on which they are kept, with a detailed report as to the health of the animals and the sanitary condition of the premises; quarantine of all animals suspected of being diseased, followed by an examination by a Department inspector not only of the suspected animal but of all other members of the herd in which it is found, with the slaughter of such as are found diseased; disinfection of the premises where diseased animals are found and a "follow-up" examination of the herd three months later; the same process of disinfection and re-examination of herd again carried out if additional cases are found; tuberculin testing of herds at request of the owners, under an agreement as to the disposal of the reacting animals; co-operation with the United States Department of Agriculture in the testing of herds of pure-bred animals made with the twofold object of eradicating the disease and establishing an accredited list of tuberculosis-free herds, both of which must ultimately be to the financial benefit of the owner and the convenience of intending purchasers. The problem is therefore attacked from all its different angles.

In our opinion the present Massachusetts plan of searching out and disposing of clinical cases of tuberculosis, thereby removing the most active spreaders of the disease, is one of the most effective methods by which progress in its actual control is accomplished. The diagnostic value of the tuberculin test, carefully applied by competent men, is very generally recognized; it should be taken advantage of at every opportunity for the purpose of disclosing the non-clinical cases. Although not infallible even in the hands of most competent and careful veterinarians, satisfactory control of the prevalence of tuberculosis among our neat cattle is not possible without its aid.

BOVINE TUBERCULOSIS



Killed: LESIONS FOUND	1926	1441	1549	1880	1699	1819	1764	1807	1419	1631	1946	1345	1021	1052	1269	1017	755
PERMIT TO KILL "	20	28	74	68	82	80	85	101	115	105	161	141	63	31	124	309	248
Killed: NO LESIONS "	81	121	110	116	152	301	375	243	151	161	231	263	174	121	128	78	29
DIED	66	54	68	78	66	80	68	73	57	80	62	52	36	58	51	33	41
RELEASED	563	792	756	587	749	723	1027	845	508	345	549	412	288	194	284	303	129
TOTAL	1956	2436	2557	2729	2748	2983	3319	3069	2250	2322	2949	2263	1582	1456	1856	1740	1202



The preceding chart has been made from Department records and covers a period of seventeen years. Reference to it shows a sharp decline during the past year both in the number of cases of tuberculosis reported from all sources and in the number of animals found by post-mortem examination to be positively affected with that disease. It also shows that the number in each instance is the lowest recorded during the period covered by the chart.

In this connection it should be stated, as showing the relation of number of cases of tuberculosis to number of animals in the State, that the records of the annual inspection of all bovine animals in 1918 show that their number has increased about 1 per cent. (2,445 animals) during the year, and also that their present total number is at about the yearly average for the period covered by the chart. The low record of tuberculosis cases shown in the years 1914 and 1915 is misleading, for the reason that on account of the prevalence of foot-and-mouth disease during those years examinations and inspections were necessarily suspended.

Following are various tables showing the extent of the work of the Department in connection with the control of bovine tuberculosis in Massachusetts for the year ending Nov. 30, 1918: —

MASSACHUSETTS CATTLE.

Cattle reported as diseased in 1917 disposed of in 1918, . . . . .	5
Cattle reported as diseased during the year, . . . . .	1,213
	————— 1,218

Disposal of Above Animals.

	Killed, Lesions found.	Killed, no Lesions found.	Permit to kill, Lesions found.	Permit to kill, no Lesions found.	Died.	Released.	Forward to 1919.	Totals.
Reported by inspectors, owners, etc., . . . . .	737	15	30	10	40	126	10	968
Reacted to Department tests, . . . . .	-	-	81	2	-	-	6	89
Reacted to private tests, . . . . .	18	-	92	1	1	3	-	115
Reacted to United States tests, . . . . .	-	-	45	1	-	-	-	46
Totals, . . . . .	755	15	248	14	41	129	16	1,218

The preceding table shows the disposal of Massachusetts cattle suspected of tuberculosis and reported from all different sources. Following is a tabulation of tuberculin tests only, made by Department agents and reported by private veterinarians, showing also the disposal of such reactors as came under the jurisdiction of the Department and such as could be arranged for by consultation with owners.

*Department Tests.*

Premises on which tests were made, . . . . .	24
Number of animals tested, . . . . .	583
Number of animals tested more than once, . . . . .	112
Number of reactors, . . . . .	164

*Disposal of Reactors.*

Killed, lesions found (including 2 tested in 1917), . . . . .	81
Killed, no lesions found, . . . . .	2
Killed by owner, no killing order issued, . . . . .	6
Awaiting action, . . . . .	72

NOTE. — In addition to above, 5 animals were quarantined after test and killed, same being included in above record as reported by inspectors.

*Tests reported by Private Veterinarians.*

Number of herds in which animals were reported, . . . . .	79
Number of animals tested, . . . . .	1,748
Number of animals reported tested more than once, . . . . .	370
Number of reactors, . . . . .	493

*Disposal of Reactors.*

Slaughtered by owner, no record of post-mortem findings, . . . . .	305
Condemned on physical examination, . . . . .	18
Died, no post-mortem examination made, . . . . .	1
Killed, lesions found, . . . . .	81 <sup>1</sup>
Killed, no lesions found, . . . . .	1
Showing no physical symptoms of tuberculosis, no record of disposal, . . . . .	30
Retested by Department agents and killed, . . . . .	17
Awaiting action, . . . . .	40
	493

<sup>1</sup> In addition, 11 animals reacting to tests made in 1917 were killed and lesions found, recorded in preceding table.

During the year agents of the Department physically examined 799 herds of Massachusetts cattle comprising 8,940 head, of which number 850 were killed and found diseased.

#### INTERSTATE CATTLE.

##### *At Brighton Quarantine Station.*

Number held from 1917 for tuberculin retest in 1918, . . .	5	
Number received and tuberculin tested during the year, . . .	14,119	
Number accepted on approved records of test, . . .	1,002	
	—	15,126

##### *Disposal of Above Animals.*

Number released on accepted records of test, . . .	1,002	
Number released on first test by Department agents, . . .	13,487	
Number released on second test by Department agents, . . .	150	
Number condemned, lesions of tuberculosis found, . . .	390	
Number condemned, lesions of tuberculosis not found, . . .	45	
Number slaughtered on "permit to kill" warrant, lesions found, . . .	29	
Number slaughtered on "permit to kill" warrant, lesions not found, . . .	8	
Number released for slaughter at owner's request, . . .	2	
Number died, . . .	2	
Number held awaiting retest, . . .	11	
	—	15,126

##### *At Other Points.*

Number condemned in 1917 awaiting slaughter in 1918, . . .	7	
Number held from 1917 for test or other disposal in 1918, . . .	110	
Number received during 1918, . . .	6,407	
	—	6,524

##### *Disposal of Above Animals.*

Number released on accepted records of test, . . .	2,942	
Number released on first test by Department agents, . . .	3,200	
Number released on second test by Department agents, . . .	57	
Number condemned, lesions of tuberculosis found, . . .	77	
Number condemned, lesions of tuberculosis not found, . . .	6	
Number slaughtered on "permit to kill" warrant, lesions found, . . .	11	
Number slaughtered on "permit to kill" warrant, lesions not found, . . .	3	
Number died, . . .	4	
Number condemned awaiting slaughter, . . .	1	
Number held awaiting test or other disposal, . . .	210	
Number held awaiting retest or other disposal, . . .	13	
	—	6,524



## SUMMARY.

Total interstate dairy cattle received at Brighton station,	15,126
Total interstate dairy cattle received at other points,	6,524
	———— 21,650

*Origin of the Above Interstate Cattle.*

Vermont, . . . . .	8,480
New Hampshire, . . . . .	6,439
Maine, . . . . .	4,945
Connecticut, . . . . .	241
Rhode Island, . . . . .	61
New York, . . . . .	1,147
Other States, . . . . .	337
	———— 21,650

Animals other than dairy cattle requiring tuberculin test, received at other points than the quarantine stations and brought from other States on permits issued by the Department, may be classified as below.

*Cattle not requiring Tuberculin Test.*

Cattle for immediate slaughter, . . . . .	2,534
Calves for immediate slaughter, . . . . .	3,282
Dairy calves under six months old, . . . . .	214
Cattle returned from out-of-State pastures, . . . . .	569
Returned from sales or exhibitions in other States, . . . . .	106
Returned from temporary stay in other States for other purposes, . . . . .	6
Remaining in State for brief periods only, for breeding purposes, etc., . . . . .	80
For temporary stay at sales or exhibitions, . . . . .	73
	————
Total, . . . . .	6,864

There are large slaughtering establishments at Haverhill, West Newbury and Springfield where Federal inspection of slaughtered animals is maintained, to which points cattle and calves for immediate slaughter can be shipped without special permit, record of which is not kept by this Department. There are on an average several thousand animals shipped to these points annually, and it is estimated that at least from 90 to 95 per cent. of them come into Massachusetts from other States.

There were 1,288 permits issued during the year for bringing cattle from other States to points outside the quarantine stations, on 20 of which no report was received before the close of the year. Three hundred and thirty-four animals came into the State without the proper permit, many of which, however, were accompanied by duly approved certificates of tuberculin test made in the States from which they were shipped, and all the remaining ones were either tested by agents of the Department, or accounted for as requiring no test.

During the spring and early summer Massachusetts veterinarians inspected and tagged 1,006 head of cattle that were to be sent into other States for pasture, 120 of them having been tagged at Brighton. Most of these cattle went into the State of New Hampshire, under permit from the Commissioner of Agriculture of that State, and on being returned to Massachusetts were checked up as far as possible by their tag numbers.

The Department keeps records of all animals received at the several quarantine stations, also the States from which neat cattle are shipped, as shown by the following figures:—

*Receipts of Stock at the Watertown Stockyards for the Year ending Nov. 30, 1918.*

New Hampshire cattle,	3,790
Vermont cattle,	8,153
Massachusetts cattle,	503
Calves,	24,805
Sheep and lambs,	1,334
Swine,	3,259

*Receipts of Stock at the New England Dressed Meat and Wool Company's Yards at Somerville for the Year ending Nov. 30, 1918.*

Maine cattle,	3,247
New Hampshire cattle,	3,956
Vermont cattle,	16,072
Massachusetts cattle,	967
Western cattle,	3,186
Canada cattle,	550
Calves,	103,088
Sheep and lambs,	236,620
Swine,	1,233,500

*Receipts of Stock at Brighton for the Year ending Nov. 30, 1918.*

Maine cattle, . . . . .	11,105
New Hampshire cattle, . . . . .	10,249
Vermont cattle, . . . . .	6,727
Massachusetts cattle, . . . . .	14,839
New York cattle, . . . . .	20,656
Western cattle, . . . . .	31,066
Canada cattle, . . . . .	99
Calves, . . . . .	99,272
Sheep and lambs, . . . . .	6,289
Swine, . . . . .	33,267

## GLANDERS.

The prevalence of glanders among the horses and mules owned in the Commonwealth has always been one of the principal conditions toward the relief of which the activities of this Department have been directed.

For many years this disease caused serious monetary losses to citizens who used this class of animals for purposes of business or pleasure. Its widespread prevalence was a subject of much anxiety especially to those engaged in business requiring large numbers of animals worked or stabled under conditions favorable to the spread of contagion.

As with other contagious diseases, glanders, if not controlled, spreads with a certainty and rapidity in direct ratio to increasing numbers of susceptible subjects kept under conditions allowing close contact. This has been recently shown by army conditions. Glanders early appeared at many points where horses and mules had been assembled for service with the several allied armies, and owing to conditions so favorable for the transmission of the disease from animal to animal it rapidly spread to an extent which rendered its control one of the serious problems of the veterinary officials, to whom was assigned the duty of protecting and maintaining the health of the hundreds of thousands of horses and mules so assembled.

The prevalence of glanders among Massachusetts horses and mules has been progressively reduced during the past six years, as shown by a tabulation (and chart following) of the Department's records covering a period of twenty years. It will be seen that during the past year the number of cases is the

lowest recorded during the period mentioned, and that this year there has been a reduction of 32 per cent. from the number of cases recorded in 1917.

The successful methods of control heretofore in operation have been continued during the past year. They may be briefly referred to as comprising the following:—

Immediate quarantine of all reported cases; prompt killing of all clinical cases, followed by disinfection of the premises where kept, of the blacksmith shops where shod and of watering troughs where they were in the habit of drinking; examination and re-examination of all contact animals, together with application of the several diagnostic tests when necessary; extension of the plan of testing whole stables; closing of public watering troughs in sections where an outbreak of the disease occurs; testing of all horses and mules shipped interstate from New York, New Jersey, Connecticut and Rhode Island.

The Department's records for the year ending Nov. 30, 1918, show the following facts:—

At the end of 1917, 31 animals were under observation. Of this number, 19 have been killed as positive cases, 10 have been released as free from the disease, and 2 died or were killed before final diagnosis was made.

During the past year 1,003 animals have been examined. Of this number, 174 animals proved to be positive cases and were destroyed in accordance with the requirements of the law; 14 died or were killed by owners before diagnosis had been made; 802 were released as free from the disease; and 7 were still held under observation at the end of the year. Five animals were killed by order of the Department, post-mortem examination of which did not reveal the presence of the disease, and full appraised value of which was \$600. One animal was killed at owner's request, and no lesions of the disease were found.

*Horses reported as Suspected.*

Brought forward from the year 1917, . . . . .	31
Arriving from outside of the State and condemned, . . . . .	7
Reported by renderer, . . . . .	1
Reported by inspectors, Department agents, veterinarians, owners, etc., . . . . .	209
Contact animals examined in stable tests, . . . . .	786

— 1,034



Disposal of Above Horses.

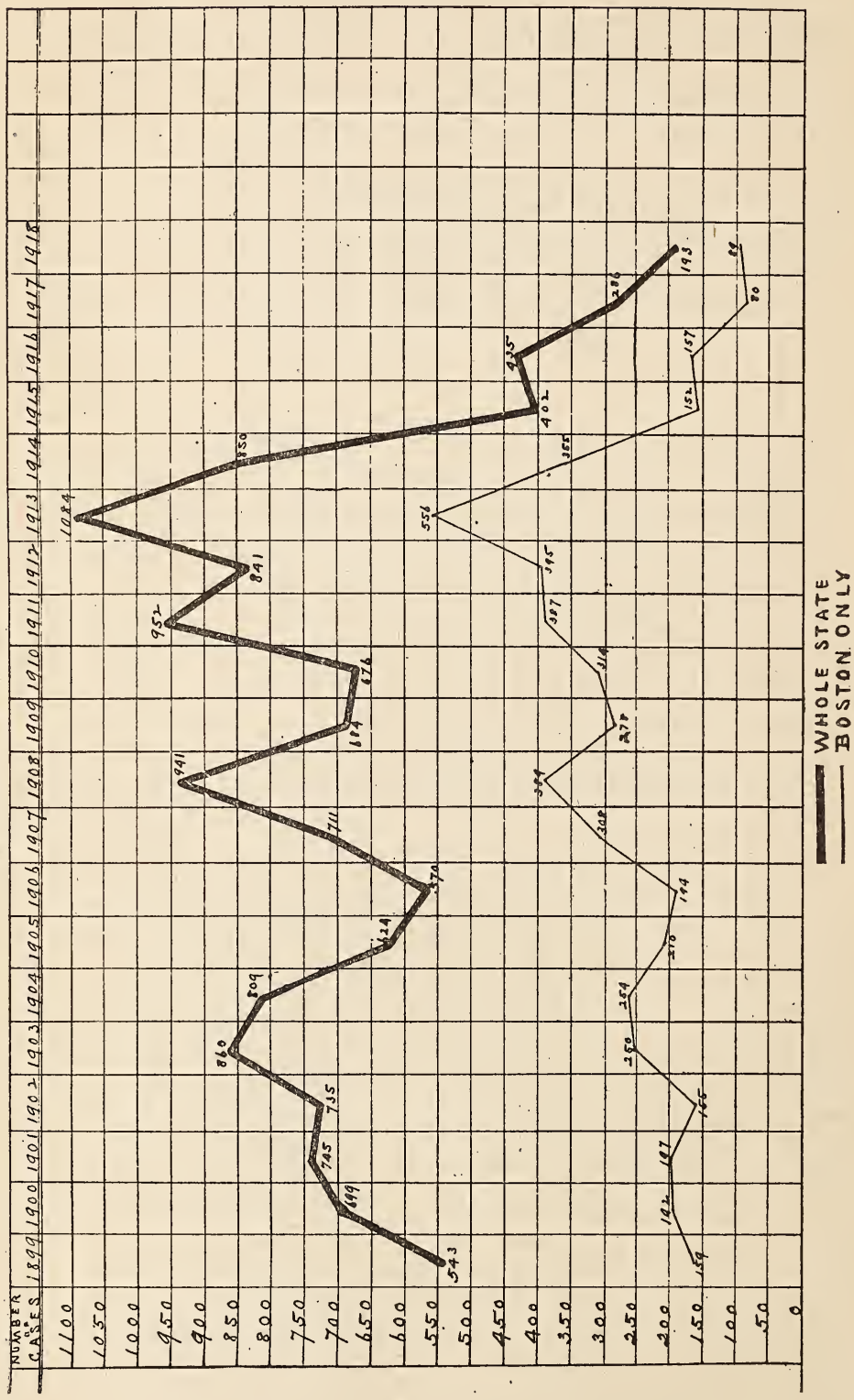
Appraised and killed, positive,	180
Reported by renderer, positive,	1
Killed by owners, no award, positive,	8
Died, positive,	4
	— 193
Killed at owner's request, no lesions found,	1
Appraised and killed, no lesions found,	5
Killed by owners or died, no lesions found,	16
Released as not affected with glanders,	812
Awaiting disposition,	7
	— 1,034

Following is a table giving the number of cases of this disease covering a period of twenty years. In this table cases which have occurred in the city of Boston are shown separately, on account of the fact that Boston was for many years the storm center of this disease. Special tabulation of the number of cases in that city has always been made in order that its relative importance to other sections of the State may be studied.

Number of Cases.

YEAR.	CASES.		
	In Boston.	In Other Places.	Totals.
1899, . . . . .	159	384	543
1900, . . . . .	192	507	699
1901, . . . . .	197	548	745
1902, . . . . .	155	580	735
1903, . . . . .	250	610	860
1904, . . . . .	254	555	809
1905, . . . . .	210	414	624
1906, . . . . .	194	376	570
1907, . . . . .	308	403	711
1908, . . . . .	389	552	941
1909, . . . . .	278	406	684
1910, . . . . .	314	362	676
1911, . . . . .	387	565	952
1912, . . . . .	395	446	841
1913, . . . . .	556	528	1,084
1914, . . . . .	355	495	850
1915, . . . . .	152	250	402
1916, . . . . .	157	278	435
1917, . . . . .	80	206	286
1918, . . . . .	89	104	193

GLANDERS





The Massachusetts Society for the Prevention of Cruelty to Animals, the Boston Workhorse Relief Association, the Animal Rescue League, and the branches of these various associations in many cities and towns of the State, have through their agents been of material aid to the Department in the work of controlling this disease. Their close observation of working animals of all classes has brought to light many showing suspicious symptoms which they have promptly reported to this Department, and many of the animals so reported have proved to be positive cases of the disease.

The constant activity of the humane societies in removing disabled animals from work, and destroying those which on account of extreme age or poor condition are no longer useful, is undoubtedly a factor in the suppression of glanders, as such animals are very susceptible to this infection.

The maximum amount, fixed by chapter 646 of the Acts of 1913, which may be paid for any one animal condemned and destroyed on account of being affected with glanders being \$50, the appraised value of the animals condemned is a subject of considerable interest. Of the 193 positive cases of glanders occurring during the year, 180 were appraised at a total valuation of \$29,572, the average amount per animal being \$164.29. On the remaining 13 animals no appraisal was made for the following reasons: 1 of them was reported by a renderer, the disease having been found on autopsy; 11 died or were killed by owners before appraisal could be made; and 1 animal killed was of no market value.

Of the 180 horses appraised no award was allowed on 9, 7 of them being interstate, and 2 not having been in the Commonwealth the required twelve months prior to condemnation. Of the remaining 171 horses which were appraised, 161 have been paid for, the amount paid being \$7,960, and 10 are awaiting the filing of claims for payment.

#### *Complement-fixation Test.*

Of the 31 horses under observation at the end of the year 1917, 8 were condemned, 8 were released, 1 died, 1 was killed by owner, and 13 were subjected to the complement-fixation

test, with result that 11 of them were condemned and killed, and 2 were released as probably free from the disease.

Five hundred and seventy-three samples of blood were taken from 508 horses during the year 1918, and the following disposal of the animals was made:—

Animals held over from 1917, disposed of as above, . . . . .	13
Animals released on first test, . . . . .	383
Released on second test, . . . . .	24
Released on third test, . . . . .	7
Died or killed by owner after first test, . . . . .	6
Died or killed by owner after second test, . . . . .	2
Condemned on first test, . . . . .	48
Condemned on second test, . . . . .	14
Condemned on third test, . . . . .	3
Held for further observation, . . . . .	8
	<hr/>
	508

#### *Ophthalmic-mallein Test.*

This test has been applied to 947 horses during the year. It happens that the test in some instances was repeated on the same animals, and 1,194 such tests have been made. The results are as follows:—

Tests giving positive reaction, . . . . .	184
Tests giving no reaction, . . . . .	868
Tests giving unsatisfactory results, . . . . .	142
	<hr/>
	1,194

In the so-called “stable tests,” or tests of all animals in stables where glanders has been found, 786 horses have been tested in 40 stables, and among them 87 cases of glanders have been found. In this connection it might be mentioned that of the total number of 193 cases of glanders that occurred during the year, 100 did not show any clinical symptoms and therefore would have escaped detection by the ordinary physical examination. This fact shows the value of the several diagnostic tests now available.

#### *Interstate Horses.*

Horses, asses and mules shipped to Massachusetts from the States of New York, New Jersey, Connecticut and Rhode Island must be accompanied by a permit from the Commis-

sioner of Animal Industry. This regulation was established on account of the prevalenace of glanders among the horses of the States mentioned, and in order that upon arrival the animals might be immediately located and examined by agents of this Department.

The number of horses, mules and asses shipped from these States has decreased from 4,764 in the year 1917 to 4,425 in the year ending Nov. 30, 1918. Among these animals very few cases of glanders have been found, as shown by the following statistics: —

*Equine Animals from New York, New Jersey, Connecticut and Rhode Island.*

Mules,	. . . . .	5	
Horses,	. . . . .	4,420	
		<hr/>	4,425

*Disposal of Above Animals.*

Died soon after arrival,	. . . . .	2	
Condemned as affected with glanders,	. . . . .	4	
Released upon physical examination,	. . . . .	2,882	
Released after test,	. . . . .	1,537	
		<hr/>	4,425

The small number of animals condemned, as shown by the above table, is worthy of notice. Many of the animals brought from the above-mentioned States are of the better class, being highly bred horses used for carriage work and breeding purposes. The secondhand horses, which are trafficked in and sent from the markets of one State to those of another for purpose of public sale, have been specially watched on account of their being considered more liable to be subjects of contagious disease than the higher class animals, and if not accompanied by a satisfactory certificate of test have been tested on arrival by agents of the Department.

## RABIES.

On account of rabies being readily communicable to man by the bites of animals affected with that disease the work of control and eradication is primarily of importance as a measure in protection of the public health. A certain monetary loss



also occurs by the infection of valuable dogs and other domestic animals, every species of which is susceptible to the disease.

The dog only need be considered as a spreader of the disease in Massachusetts, and we have found the ownerless or stray dog to be the principal offender in this direction. The dog which has proper care is under constant observation and if he shows any abnormal condition is a subject of notice, and professional or official attention is called to him, whereas in the ownerless or stray dog rabies may be well advanced in its course and other animals may become affected before he is the subject of anyone's particular attention. Unfortunately the dog license laws are not strictly enforced in all cities and towns, and therefore what might be a great factor in the control and eradication of this disease is not operative. In our opinion, if the present laws were more strictly enforced than they have been hitherto, or more effective ones were enacted, a marked reduction in the prevalence of rabies would result.

Many complications in the control and eradication of other infectious diseases among other species of animals are not encountered in the control of rabies, for the reason that there is much less traffic in dogs than in other domestic animals which are used for production of food material or for business purposes, and also because their market value is on an average very much less. It is possible also to confine dogs at much less expense than larger animals, and they generally endure restraint with less danger to their health.

Prompt action by local inspectors and the co-operation of town officials with this Department generally result in the suppression of an outbreak of the disease before its extension in any community becomes serious. Measures necessarily taken to this end cause more or less inconvenience and trouble to dog owners and occasionally subject public officials to unjust criticism, but the danger to human life from the existence of this infection justifies the application of such measures as have been found effective in its control.

Following is a general outline of the Department's methods in this work under the present regulations:—

Upon report being made to the Department of Animal Industry that a person has been bitten by a dog, the inspector

of animals of the town or city in which it occurs is ordered to make an examination of the animal, and, even if it appears to be healthy, to have it restrained for a period of fourteen days for the purpose of observation. This regulation is deemed necessary for the reason that competent authorities have proven that in some instances the bite of a dog infected with rabies may communicate the infection fourteen days before the animal itself shows clinical symptoms. If at the end of this period no symptoms of rabies have developed, the animal may be released. In case a person is bitten by a dog which upon examination by the inspector of animals, or any other person, shows evidence of already being affected with rabies, this animal is immediately confined in strict quarantine. If it is subsequently killed or dies, its head is at once sent to the Department's office, and a laboratory examination of the brain is made for the purpose of confirming the diagnosis. Information as to the laboratory findings is promptly communicated to the person or persons who have been bitten. The State Department of Health is given the information received in every case of dog bite reported to this office, whether the bite has been inflicted by an animal suspected of rabies or not. We also order the local inspector of animals to ascertain not only the names of all persons who have been bitten by dogs suspected of rabies, but to find out if animals have also been bitten, and if so to place the same in quarantine for a period of at least ninety days. All dogs which are known to have been in contact with a rabid animal, whether or not it appears that they have been bitten by it, are also placed in quarantine for the same period.

If an unusual number of cases of rabies is found to exist in any town or city, the selectmen or the mayor or board of aldermen are asked to issue a restraining order, under the provisions of section 158 of chapter 102 of the Revised Laws. Such an order obliges all dog owners to confine their animals to their own premises for a certain period, or take them therefrom only on leash. This restraining order is much more effective in the local control of an outbreak than is an order which compels owners only to muzzle the animals but not restrain them, as a muzzled animal let loose may in some way

get the muzzle off and bite other animals or people. A muzzled dog at large may, therefore, become much more dangerous than an unmuzzled one which is at all times confined upon owner's premises or taken therefrom only on leash. Dogs found running at large while a restraining order issued by town or city authorities is in force may be killed on the issuance of a warrant for the same to a police officer. It has been found necessary to issue general restraining orders in four towns of the Commonwealth during the past year. These orders were for periods of ninety days.

Our force of district agents, most of whom are veterinarians located in different parts of the State, together with the local inspectors of animals, of whom there is one or more in every city and town of the State, constitutes an organization by which systematic local control of an outbreak of this disease can generally be accomplished within a reasonably short time.

During the past two years we have been in constant fear of local outbreaks of this disease on account of its unusual prevalence in the neighboring State of Connecticut. In that State during this period rabies has prevailed extensively in many different towns some of which are contiguous to the Massachusetts line, and a spread of the contagion across the line into this State might reasonably be expected.

During the year ending Nov. 30, 1918, 345 animals were reported to the Department for diagnosis, observation or quarantine on account of the prevalence of rabies, and 58 were brought forward from the year 1917. The records have been classified as follows: —

Animals suspected of rabies, . . . . .	95
Animals exposed to rabies (51 reported in 1917, 103 in 1918), . . . . .	154
Animals which have inflicted bites upon persons (7 reported in 1917, 147 in 1918), . . . . .	154

*Animals suspected of Rabies.*

	Dogs.	Cattle.	Cats.	Drakes.
Diagnosis positive, . . . . .	61	8	—	1
Diagnosis negative, . . . . .	11	—	1	—
Diagnosis questionable, . . . . .	12	1	—	—



Of the 61 dogs "diagnosis positive," 13 had bitten persons.

Of the total 13 cases classed as "diagnosis questionable," 3 dogs were reported as being affected with rabies, but from description of symptoms and as heads were not obtainable for examination they are not recorded as positive cases; 3 dogs after showing symptoms indicating rabies disappeared and could not be located; 5 showing symptoms gave negative diagnosis to laboratory examination; on 1 laboratory diagnosis was unsatisfactory; and the head of 1 animal, a heifer, arrived at laboratory in such a state of decomposition that examination could not be made. Of the 12 dogs, 2 had bitten persons.

*Animals exposed to Rabies.*

	Dogs.	Cattle.	Cats.
Number released after a quarantine of ninety days, .	117	1	-
Number killed, no symptoms having developed, . .	26	-	1
Number killed, positive symptoms having developed, .	5	-	-
Number still held under observation, . . . . .	4	-	-

*Animals which have inflicted Bites upon Persons.*

	Dogs.
Number killed immediately, no diagnosis, . . . . .	1
Number killed during quarantine, no symptoms having developed, . . .	24
Number released after fourteen days' quarantine, . . . . .	124
Number still held under observation, . . . . .	5

Fifty-eight animals which were under observation at the close of the year 1917 were disposed of during 1918, as follows:—

Dogs killed at request of owners, not having shown symptoms of the disease, . . . . .	1
Dogs released from observation, no symptoms having developed, . . .	57

There have been examined in the laboratory during the past year the brains of 58 dogs, 4 cows and 1 cat. Of this number, 27 dogs and 3 cows showed positive evidence of the disease. In the case of 2 dogs the diagnosis was questionable, and in 27

dogs and 1 cat the diagnosis was negative, and the brains of 2 dogs and 1 heifer were so decomposed at time of examination that no diagnosis could be made. Of the 345 animals reported for observation, diagnosis or quarantine 33 were, as far as the Department could determine, unlicensed and ownerless dogs, 14 of which proved to be positive cases of the disease.

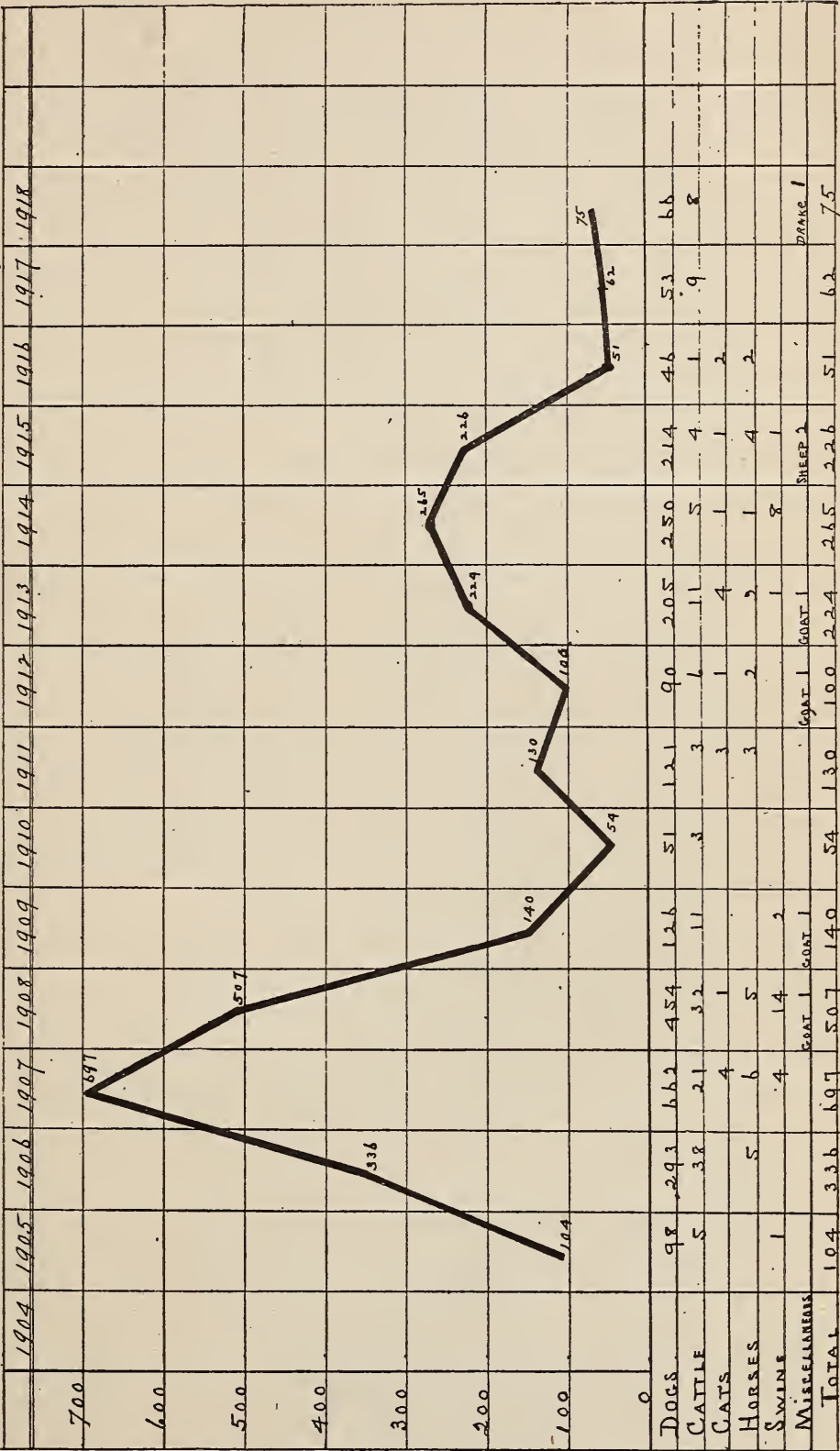
The following table shows the number of positive cases of rabies by cities and towns.

CITY OR TOWN.	Dogs.	Cows.	CITY OR TOWN.	Dogs.	Cows.
Barre, . . . . .	2	-	New Braintree, . . . . .	1	1
Blackstone, . . . . .	2	-	Newton, . . . . .	1	-
Boston (6): —			North Attleborough, . . . . .	2	-
Boston proper, . . . . .	2	-	North Brookfield, . . . . .	1	1
Brighton, . . . . .	1	-	Oxford, . . . . .	1	-
Dorchester, . . . . .	2	-	Paxton, . . . . .	2	-
West Roxbury, . . . . .	1	-	Petersham, <sup>1</sup> . . . . .	3	1
Braintree, . . . . .	1	-	Plainville, . . . . .	2	1
Charlton, . . . . .	1	-	Quincy, . . . . .	5	-
Dighton, . . . . .	1	2	Rehoboth, . . . . .	5	-
Dudley, . . . . .	1	-	Rutland, . . . . .	1	-
Easton, . . . . .	6	-	Sheffield, . . . . .	1	-
Halifax, . . . . .	1	-	Shrewsbury, . . . . .	1	-
Hanson, . . . . .	1	-	Southbridge, . . . . .	-	1
Holden, . . . . .	1	-	Taunton, . . . . .	1	1
Lancaster, . . . . .	1	-	Waltham, . . . . .	2	-
Leicester, . . . . .	2	-	Webster, . . . . .	1	-
Leominster, . . . . .	1	-	Worcester, . . . . .	5	-
Mansfield, . . . . .	1	-	Wrentham, . . . . .	1	-
Methuen, . . . . .	1	-			
Middleborough, . . . . .	1	-	Totals, . . . . .	66	8

<sup>1</sup> One drake in this town was found to be a positive case.

Following is a chart showing the proven cases of rabies in the several species of animals covering the period from 1905 to 1918, inclusive.

RABIES



HOG CHOLERA.

Our work in hog cholera control and eradication by means of preventive inoculation has increased considerably during the past year. Requests for treatment have continued to come in so rapidly that it has at times taxed our ability to attend to them as promptly as we have desired. This increase may be attributed chiefly to two factors: first, that more swine owners have become convinced that an immunity of their swine against hog cholera is possible by the administration at the proper time of the treatment which we are providing, and second, that many additional pig clubs have been organized, the members of which in nearly all instances request inoculation for their swine, and it generally happens that each member of a pig club owns only one or two animals and our agents have consequently been obliged to travel over a large territory in order to treat comparatively few animals. In a great many instances also the pig club work requires two visits on the part of an agent, the first, for the "serum only" or temporary treatment, and a second, six weeks later, for the simultaneous or permanent treatment. We are pleased to say, however, that all requests have been complied with, even though our force of agents has been depleted by reason of the fact that four of them have been called into military service.

During the year preventive inoculation has been administered to 56,768 animals. This number represents 1,432 herds located in 218 cities and towns. Our records show that we have treated 680 more herds than last year in 28 more cities and towns. The following list shows the cities and towns in which hog cholera prevention work has been carried on during the past year: —

CITY OR TOWN.	Herds.	Animals treated.	CITY OR TOWN.	Herds.	Animals treated.
Abington, . . . .	6	12	Ashburnham, . . . .	3	37
Acton, . . . . .	4	149	Athol, . . . . .	2	16
Adams, . . . . .	5	15	Attleboro, . . . . .	4	71
Agawam, . . . . .	17	974	Auburn, . . . . .	1	69
Amesbury, . . . . .	3	30	Ayer, . . . . .	8	1,696
Amherst, . . . . .	12	60	Barnstable, . . . . .	28	100
Andover, . . . . .	2	20	Becket, . . . . .	1	5
Arlington, . . . . .	1	2	Bedford, . . . . .	2	7



CITY OR TOWN.	Herds.	Animals treated.	CITY OR TOWN.	Herds.	Animals treated.
Belchertown, . . . . .	1	5	Lexington, . . . . .	15	2,783
Belmont, . . . . .	7	1,681	Lincoln, . . . . .	10	702
Bernardston, . . . . .	2	12	Littleton, . . . . .	14	1,428
Beverly, . . . . .	4	73	Longmeadow, . . . . .	4	119
Billerica, . . . . .	2	172	Lowell, . . . . .	10	448
Blandford, . . . . .	1	13	Ludlow, . . . . .	17	360
Bolton, . . . . .	4	111	Lunenburg, . . . . .	1	1
Boston, . . . . .	10	1,148	Lynn, . . . . .	4	39
Bourne, . . . . .	10	142	Malden, . . . . .	1	1
Boxborough, . . . . .	1	23	Manchester, . . . . .	3	82
Boylston, . . . . .	2	9	Marblehead, . . . . .	20	411
Braintree, . . . . .	1	7	Marion, . . . . .	10	119
Bridgewater, . . . . .	5	329	Marshfield, . . . . .	6	37
Brimfield, . . . . .	2	4	Maynard, . . . . .	1	3
Brockton, . . . . .	9	1,668	Medfield, . . . . .	1	342
Brookfield, . . . . .	2	46	Medford, . . . . .	2	341
Brookline, . . . . .	8	132	Melrose, . . . . .	1	4
Burlington, . . . . .	4	416	Merrimac, . . . . .	3	35
Cambridge, . . . . .	1	20	Methuen, . . . . .	10	157
Canton, . . . . .	3	4	Middleborough, . . . . .	3	79
Charlemont, . . . . .	1	3	Middleton, . . . . .	2	30
Charlton, . . . . .	1	104	Milford, . . . . .	3	21
Chatham, . . . . .	1	3	Millbury, . . . . .	5	85
Chelmsford, . . . . .	4	138	Millis, . . . . .	1	60
Cheshire, . . . . .	1	2	Milton, . . . . .	2	327
Chesterfield, . . . . .	1	1	Monson, . . . . .	1	124
Chicopee, . . . . .	45	264	Montague, . . . . .	2	9
Cohasset, . . . . .	4	34	Nantucket, . . . . .	17	24
Concord, . . . . .	6	295	Natick, . . . . .	5	311
Cummington, . . . . .	1	1	Needham, . . . . .	7	929
Danvers, . . . . .	4	689	New Bedford, . . . . .	3	28
Dartmouth, . . . . .	1	11	Newbury, . . . . .	5	26
Dedham, . . . . .	5	158	Newburyport, . . . . .	17	123
Deerfield, . . . . .	1	2	Newton, . . . . .	7	122
Dennis, . . . . .	1	2	Norfolk, . . . . .	2	212
Dover, . . . . .	7	296	North Adams, . . . . .	12	579
Dracut, . . . . .	7	133	Northampton, . . . . .	22	748
Dudley, . . . . .	1	1	North Andover, . . . . .	3	65
Easthampton, . . . . .	25	113	North Attleborough, . . . . .	2	62
East Longmeadow, . . . . .	21	107	North Reading, . . . . .	2	109
Easton, . . . . .	4	35	Northbridge, . . . . .	3	121
Essex, . . . . .	2	19	Northfield, . . . . .	2	147
Erving, . . . . .	1	10	Norwell, . . . . .	1	25
Fall River, . . . . .	1	30	Oxford, . . . . .	5	96
Fitchburg, . . . . .	66	944	Palmer, . . . . .	5	139
Foxborough, . . . . .	4	51	Paxton, . . . . .	1	33
Framingham, . . . . .	5	505	Peabody, . . . . .	11	610
Franklin, . . . . .	2	2	Pepperell, . . . . .	3	91
Gardner, . . . . .	50	492	Pittsfield, . . . . .	51	1,828
Gill, . . . . .	2	86	Plymouth, . . . . .	9	437
Gloucester, . . . . .	30	1,280	Randolph, . . . . .	1	3
Grafton, . . . . .	58	763	Raynham, . . . . .	1	70
Granby, . . . . .	1	35	Reading, . . . . .	1	164
Great Barrington, . . . . .	1	34	Revere, . . . . .	6	931
Greenfield, . . . . .	11	898	Richmond, . . . . .	1	25
Groton, . . . . .	6	100	Rockport, . . . . .	4	22
Hadley, . . . . .	2	156	Rowley, . . . . .	2	19
Hamilton, . . . . .	3	17	Russell, . . . . .	1	3
Hampden, . . . . .	1	6	Rutland, . . . . .	4	124
Harvard, . . . . .	29	489	Salem, . . . . .	5	2,098
Harwich, . . . . .	4	142	Salisbury, . . . . .	1	3
Haverhill, . . . . .	5	81	Sandwich, . . . . .	6	8
Hingham, . . . . .	5	9	Saugus, . . . . .	5	127
Holden, . . . . .	9	61	Scituate, . . . . .	2	60
Holyoke, . . . . .	23	847	Seekonk, . . . . .	13	530
Hubbardston, . . . . .	2	72	Sharon, . . . . .	1	28
Hudson, . . . . .	8	88	Shelburne, . . . . .	2	4
Hull, . . . . .	6	156	Sherborn, . . . . .	6	202
Ipswich, . . . . .	4	216	Shirley, . . . . .	1	285
Kingston, . . . . .	9	25	Shrewsbury, . . . . .	1	223
Lakeville, . . . . .	1	214	Somerset, . . . . .	6	3
Lancaster, . . . . .	6	220	South Hadley, . . . . .	13	110
Lanesborough, . . . . .	4	116	Southampton, . . . . .	1	4
Lawrence, . . . . .	5	18	Southborough, . . . . .	3	59
Lee, . . . . .	1	8	Southbridge, . . . . .	1	2
Lenox, . . . . .	22	167	Southwick, . . . . .	13	65
Leominster, . . . . .	3	18	Springfield, . . . . .	40	2,165

CITY OR TOWN.	Herds.	Animals treated.	CITY OR TOWN.	Herds.	Animals treated.
Sterling, . . . .	3	185	Wellesley, . . . .	1	69
Stockbridge, . . . .	2	18	Wenham, . . . .	1	13
Stoneham, . . . .	4	18	West Boylston, . . . .	1	2
Stoughton, . . . .	1	536	West Newbury, . . . .	2	72
Sturbridge, . . . .	4	8	West Springfield, . . . .	14	77
Sudbury, . . . .	1	46	Westborough, . . . .	3	298
Sunderland, . . . .	1	35	Westfield, . . . .	20	370
Swansea, . . . .	1	454	Westford, . . . .	2	11
Templeton, . . . .	15	37	Weston, . . . .	1	35
Tewksbury, . . . .	1	879	Westport, . . . .	1	54
Tisbury, . . . .	1	83	Westwood, . . . .	6	319
Topsfield, . . . .	2	44	Weymouth, . . . .	2	215
Townsend, . . . .	2	12	Whitman, . . . .	2	2
Tyngsborough, . . . .	5	392	Wilbraham, . . . .	8	127
Upton, . . . .	1	4	Williamsburg, . . . .	2	15
Uxbridge, . . . .	2	105	Williamstown, . . . .	6	40
Wakefield, . . . .	5	173	Wilmington, . . . .	2	71
Walpole, . . . .	10	28	Winchendon, . . . .	3	28
Waltham, . . . .	20	3,795	Winchester, . . . .	2	45
Wareham, . . . .	8	39	Woburn, . . . .	7	189
Warren, . . . .	3	56	Worcester, . . . .	29	4,759
Watertown, . . . .	5	292	Worthington, . . . .	1	3
Wayland, . . . .	1	2	Wrentham, . . . .	8	240
Webster, . . . .	8	76	Yarmouth, . . . .	2	3

We constantly emphasize the fact that in order to obtain the best results and at the least expense to the swine owners it is advisable to administer the treatment before infection appears and while the animals are in a condition of health. This fact has gradually become more fully realized by owners, with the result that a greater number than formerly request treatment before the disease appears in their herds. The following table, covering five years of the Department's work, clearly shows the correctness of this statement, the number of healthy herds to which we have applied treatment showing a very considerable increase, and the number of infected herds showing a considerable decrease.

	1914.	1915.	1916.	1917.	1918.
Herds infected at time of treatment, . . . .	65	150	192	282	157
Herds apparently healthy at time of treatment, . . . .	2	95	113	470	1,275
Totals, . . . . .	67	245	305	752	1,432

Our field men are instructed to explain in detail to owners the two forms of treatment and the economical reasons for their application; also to acquaint them with the requirements which we consider essential in order to obtain the best results,



such as clean and well-bedded quarters both before and after administration of treatment, and a restricted diet during that period. Such explanations have been of more or less educational value as they have resulted in an improvement of general sanitation, which condition owners are realizing finally results in increased monetary returns.

We have deviated somewhat from our former rule of not administering treatment in infected herds unless the infection was found to be very slight. During the past year we have so modified this rule as to allow treatment in herds where the infection has been more or less extensive, believing that in many instances we could save a number of animals which otherwise might die and become a total loss. While we do not advise indiscriminate treatment of infected animals, particularly those showing a secondary infection, as such will ordinarily succumb, we believe that the value of animals saved by treatment in accordance with our present rule more than compensates the owner for the expense of treatment of those which are not saved. By an extension of the treatment of infected animals as above referred to, the percentage of mortality has been somewhat increased. As, however, we always have in mind not only the successful control of the disease and the establishment of a low record of mortality, but at the same time the economical aspect of the problem from the standpoint of the owner, we have felt justified in the modification of our former rules governing our work among infected animals.

The unusual prevalence of hemorrhagic septicemia among swine the past year has resulted in the death of many animals, and in instances where the cause of death could not be differentiated as between that disease and hog cholera, the apparent mortality record of the latter disease has been seriously affected.

The following table, giving comparative statistics for the five years in which we have been engaged in this work, presents the results more concisely than can be done in any other way:—

Comparative Statistics on Hog Cholera for 1914, 1915, 1916, 1917 and 1918.

	1914.	1915.	1916.	1917.	1918.
Outbreaks reported in which a negative diagnosis was made, . . . . .	20	122	57	42	39
Number of herds known to be infected, . . . . .	80	227	253	359	232
Number of herds known to be infected in which serum treatment was not administered, <sup>1</sup> . . . . .	—	77	43	77	75
Number of infected herds in which serum treatment was administered, . . . . .	65	150	192	282	157
<i>Herds Infected at the Time Treatment was administered.</i>					
Number of animals receiving "serum only" treatment, including infected animals and those too young for simultaneous treatment.	428	10,300	14,747	24,828	7,559
Mortality from hog cholera following "serum only" treatment (per cent.), <sup>2</sup> . . . . .	9.5	7	3.7	1.75	3.9
Number of animals receiving the simultaneous treatment. These are animals apparently healthy at time of treatment.	591	5,826	13,643	15,524	4,055
Mortality from hog cholera following the simultaneous treatment in infected herds (per cent.), <sup>2</sup> . . . . .	2	1.2	.6	.44	2.26
Total number of animals treated in infected herds, . . . . .	1,019 <sup>3</sup>	16,126	28,390	40,352	11,614
Total mortality following both "serum only" and simultaneous treatment in infected herds (per cent.), <sup>2</sup> . . . . .	5.2	4.9	2.21	1.24 <sup>4</sup>	3.34

*Preventive Inoculation in apparently Healthy Herds.*

Number of herds immunized,	.	.	.	.	.	.	.	2	95	113 <sup>5</sup>	470 <sup>5</sup>	1,275
Number of animals immunized,	.	.	.	.	.	.	.	104	863	7,657	10,870	44,754
Number of animals which died following simultaneous treatment,	.	.	.	.	.	.	.	0	1	0	3	8 <sup>6</sup>
Total number of animals treated,	.	.	.	.	.	.	.	5,123	16,989	36,047	51,222	56,768

<sup>1</sup> Due to animals being too sick to treat, showing symptoms of secondary infection, or to owners not desiring the same.

<sup>2</sup> These figures show percentages, not animals.

<sup>3</sup> Plus 4,000 which were treated, and died or were killed before results could be ascertained. These deaths were due to the use of serum which was impotent and virus which was not virulent, before the present regulations were made.

<sup>4</sup> This does not include approximately 50 animals which died on one farm, on which a final diagnosis was not made. Clinically, and by autopsies, it was impossible to determine whether the disease was hog cholera or hemorrhagic septicemia. Laboratory examinations indicate the latter, but before the work could be completed the losses stopped, and more material which was needed for a final diagnosis was not available.

<sup>5</sup> The large majority under this classification are herds which in previous years were classified as infected herds and which had yearly sustained heavy losses from hog cholera. The majority of them are garbage-fed, and experience shows that should immunization be stopped an outbreak of hog cholera would follow very closely. They are therefore classified as herds in which no infection was apparent at the time of treatment, whereas in reality they are infected herds in which the disease is kept completely under control while immunization is continued.

<sup>6</sup> None of these animals were autopsied, consequently we are unable to say whether or not death was due to cholera.

The number of herds treated does not represent the total number of visits made to premises by our agents. Thus, although the total number of herds in which treatment was given was 1,432, this required 2,421 visits. There were also approximately 100 visits made at which it was necessary to postpone work on account of unsanitary surroundings. In addition to the above, 75 visits were made to herds which were reported as infected, but where no treatment was administered for the reason that the animals were too sick to treat, having passed that stage of infection at which treatment would be of avail; also 39 visits were made where no hog cholera was found.

In connection with our record of work in prevention of hog cholera it seems necessary to call attention to the unusual prevalence of hemorrhagic septicemia among swine during the past year. The clinical symptoms of this disease so nearly resemble those of hog cholera that considerable special investigation, such as a large number of autopsies followed by careful laboratory examination, is often necessary before a positive diagnosis can be arrived at. The organism which produces hemorrhagic septicemia, *B. Suisepcticus*, is normally the inhabitant of the nasal passages of a great many healthy swine, and may not be of a particularly virulent character; but when for any reason an animal's vitality becomes lowered and a corresponding lessened resistance to infection is present, as sometimes happens after the simultaneous treatment for hog cholera has been administered, then the organism mentioned appears to increase in virulency and active symptoms of hemorrhagic septicemia appear. It is therefore often difficult, when symptoms of both diseases are present, to determine which is the primary infection and which the secondary. When, however, we are able to determine that the animals are infected with hemorrhagic septicemia successful treatment is possible, the disease in many instances being promptly checked by the administration of a bacterin prepared for that purpose. The value of this treatment, which was more or less experimental in the early part of the year, has been fully proven by its successful use on a relatively large number of animals treated. It has been applied during the year to 5,653 animals in 45 different herds with 123 deaths reported by the owners.



## MISCELLANEOUS DISEASES.

*Anthrax.* — This is a disease existing in many different parts of the world, causing the death of many thousands of animals and occurring secondarily in man. The infection is found in horses and also in cattle, sheep and other cloven-hoofed animals. The most common method of transmission to the human subject is by the handling of hides taken from animals which have been infected with the disease.

Although reports from different sections of the country indicate that the spread of this disease is on the increase, the number of cases actually occurring in this State during the past year is small. Owing, however, to the high mortality rate accompanying its prevalence we deem it necessary upon its positive diagnosis to immediately put in force all available precautions against its spread.

Some of the clinical symptoms of this disease so closely resemble those of hemorrhagic septicemia that a differential diagnosis can only be made by a laboratory examination. It is therefore our custom in all reported cases to have the field diagnosis confirmed by a laboratory examination before recording the cases as positive. Preventive inoculation of exposed animals is always advised and is administered unless the owner objects thereto. This inoculation confers an immunity against the disease for at least twelve months in a majority of cases, but as the spores of the causative agent may remain lodged in the soil in an active state for a period of years, it becomes necessary to annually apply the inoculation to all animals on premises known to be infected.

We require that carcasses of affected animals be deeply buried and covered with quicklime or burned if possible. We also advise that the areas surrounding the burial places of these carcasses be fenced to prevent grazing by other animals where the soil may be infected, and that these areas be burned over every season for the purpose of destroying any infection which may have come to the surface.

During the past year the disease has occurred only in cattle, 12 head on 7 different premises having been found to be affected. Of these 12 animals 1 was in the town of Gardner,

1 in Norfolk, 1 in Orange, 1 in Savoy, 3 were in the town of Sheffield and 5 in the town of Templeton. The preventive inoculation has been applied to 127 head of cattle and 6 horses located on 9 different premises.

Reports of the existence of anthrax on 9 premises in 7 different towns proved upon investigation to be unfounded. In one case the cause of death was found to be blackleg. In another case the animals recovered. On the cases reported from 5 of the 9 premises in 3 of the 7 towns laboratory diagnosis was negative; the specimens submitted from one town were too decomposed for a proper examination, and specimens from another were diagnosed as not a contagious disease.

*Blackleg.*—This disease, very prevalent in many different parts of the world and causing severe losses to cattle owners by a high death rate especially among young cattle, is very effectively controlled in Massachusetts by preventive inoculation administered to herds on premises where it appears or has at any time been known to prevail.

During the winter and when cattle are fed in the stable the disease rarely appears. It is therefore our custom to inoculate such animals as are about to be turned out into pastures where the disease has previously existed, immediately before they leave the barns in the spring.

We have had 17 fatal cases of the disease reported this year, exactly the same number as in 1917. They occurred on 10 different premises. We have increased the number of preventive inoculations, however, immunizing 1,083 animals on 119 different premises in 43 towns, as follows:—

Premises.					Premises.				
Adams,	.	.	.	1	Dalton,	.	.	.	1
Amherst,	.	.	.	1	Granville,	.	.	.	1
Ashburnham,	..	.	.	4	Great Barrington,	.	.	.	4
Ashby,	.	.	.	8	Greenwich,	.	.	.	1
Ashfield,	.	.	.	1	Harvard,	.	.	.	2
Becket,	.	.	.	2	Hinsdale,	.	.	.	1
Brimfield,	.	.	.	1	Holyoke,	.	.	.	3
Cheshire,	.	.	.	1	Huntington,	.	.	.	1
Chester,	.	.	.	2	Lee,	.	.	.	6
Clinton,	.	.	.	1	Leicester,	.	.	.	2
Colrain,	.	.	.	2	Lenox,	.	.	.	1

	Premises.		Premises.
Littleton, . . . . .	12	Sandisfield, . . . . .	1
Middlefield, . . . . .	4	Savoy, . . . . .	1
Montague, . . . . .	3	Shelburne, . . . . .	4
New Marlborough, . . . . .	4	Southampton, . . . . .	3
Northampton, . . . . .	3	Sterling, . . . . .	1
Orange, . . . . .	7	Templeton, . . . . .	1
Peru, . . . . .	1	Tyringham, . . . . .	1
Pittsfield, . . . . .	1	Warwick, . . . . .	6
Prescott, . . . . .	5	Williamstown, . . . . .	4
Princeton, . . . . .	1	Winchendon, . . . . .	2
Rowe, . . . . .	7		

These records show that although no more fatal cases of this disease have occurred than during 1917, preventive inoculations have been applied this year to 40 per cent. more animals. The increase in this branch of the Department's work is undoubtedly due to the fact that cattle owners are more generally informed that their cattle can be successfully treated in protection against the disease without in any way interfering with their health or development.

*Actinomycosis.* — Very few cases of this disease have been reported this year. Our customary action is to apply quarantine to animals reported as affected, while allowing owners to fatten them for slaughter if desired.

Our attention has been called to 6 cases only during the year, 1 each in Edgartown, Lee, Lowell, Monterey, Plymouth and Sturbridge. Of the 6 cases reported, 1 was released as not being affected, 1 was killed at Brighton being affected with tuberculosis, and 4 were condemned and slaughtered under proper meat inspection.

*Hemorrhagic Septicemia in Cattle.* — This is a disease which seems to be gradually increasing in prevalence each succeeding year. Our records for this year show that 6 more fatal cases have been reported than during 1917. Twenty-two head of cattle have died from the disease, these fatal cases occurring on 10 different premises in 9 different towns, namely, Barre, Dalton, Goshen, Otis, Plymouth, Princeton, Rowe, Rutland and Windsor.

Its prevalence among swine is referred to on page 32 in connection with our work in prevention of hog cholera, for the



reason that our field men engaged in inoculating swine against cholera have their attention directed to cases of hemorrhagic septicemia among them, and the record of both diseases is made at one time.

The symptoms of hemorrhagic septicemia affecting cattle very closely resemble those of anthrax in many instances, and a differential diagnosis between these two diseases has frequently been possible only as a result of a laboratory examination of specimens from the carcasses of the animals.

Preventive treatment has recently been developed to such a degree that it has been found possible to protect the remaining healthy animals, in herds where cases of the disease have occurred, by inoculation of bacterins prepared for the purpose. We have applied this preventive inoculation to 94 head of cattle during the past year.

It is generally found that removal of the herd from the pasture or premises where a fatal case has developed results in preventing further extension of the disease. This experience indicates that the source of the infection is generally located in the soil, and that contagion does not spread rapidly from animal to animal. The experience of many other States where a widespread prevalence of this disease has been caused by shipments of cattle to the farms from public stockyards has not been repeated in Massachusetts. This is undoubtedly due to the fact that much of the restocking of herds in Massachusetts is by the addition of cattle shipped directly from farms of near-by States and not often through any public stockyard. At the principal Massachusetts stockyards located at Brighton this disease has not appeared, and it therefore seems that Massachusetts herds may be safe from the extension of the disease through the same channels by which it has been spread in many other sections of the country.

A few cases of this disease have appeared in sheep during the past year, and 17 animals have been successfully inoculated in its prevention.

*Mange.* — This very troublesome disease seems to have been much less prevalent than usual in Massachusetts during the past year. Our records show a very much smaller number of animals to have been affected with it than during the years



1916 or 1917. In the former year 449 head of cattle were reported as affected, but during the past year only 85 head have been so reported. There are, however, 4 herds in which the disease has prevailed in which the total number of animals affected has not been given. Thirty-nine horses on 21 premises have also been reported as showing positive symptoms of this disease. The premises on which cattle have been reported are located in Bridgewater, Canton, Greenwich, Hancock, Ludlow, Mendon, Methuen, Wakefield and Wayland, and the places from which affected horses have been reported are Abington, Boston, Cambridge, Lincoln, Medford, Newburyport, Newton, Williamstown, Woburn and Revere. Ninety horses reported as contact cases have been examined by our agents and found not to be diseased.

Successful treatment of this disease is possible if the owner or attendant will faithfully carry out the local application of proper medicinal remedies. The treatment recommended is not expensive but it is very inconvenient in application. It is our custom to quarantine affected animals if they are kept under conditions which favor the spread of the disease, and particularly where owners and attendants are not likely to properly attend to them. Fortunately, however, most of the owners of cattle affected with mange realize that its cure means an increased amount of animal products, and they therefore faithfully follow directions for treatment. Successful treatment of the disease in horses also means increased capacity of the animals for work and less feed necessary to keep them in proper condition.

*Foot-and-mouth Disease.* — This disease has not appeared in Massachusetts during the past two years, although we have received reports of its existence in the towns of Enfield and Petersham and in the city of Boston. Prompt investigation of these reports proved them to be unfounded. As this disease is at the present time prevalent in England, danger of its appearance in this country is more or less imminent. All inspectors of animals have been notified to be constantly on watch, in order that should it appear prompt measures may be taken to prevent its spread and to accomplish its extermination.

*Diseases of Sheep.*—No outbreak of contagious disease among sheep has been reported in the past year with the exception of the few cases of hemorrhagic septicemia previously referred to, and in prevention of which several animals have been inoculated. This class of animals is very susceptible to diseases of a parasitic nature, and a few cases of what is known as nodular disease have been reported in the towns of Bolton, Lincoln, Rowley and Williamstown. This disease is due to an intestinal parasite which causes more or less loss by death of young lambs, and also by retarding the proper development of others which are harboring it.

*Contagious Abortion.*—The prevalence of contagious abortion in Massachusetts herds of cattle during the past year has been of the same great concern to their owners as has been referred to in previous reports. Its ravages are well known to every one engaged in the production of milk or in the breeding of thoroughbred cattle, and the losses occasioned by its attendant results are estimated to be second only to those caused by bovine tuberculosis. As the chief losses caused by this disease are those occasioned by resulting sterility, either actual or temporary, which condition should properly be the subject of veterinary investigation, followed by such treatment as is recommended by the investigator, it would seem that the function of this Department in connection with the disease should properly be the giving of advice, more or less general in character, as to the management of infected herds and the carrying out of sanitary measures recognized as essential, and limiting the extension of the infection. In other words, it does not seem feasible for this Department to enter the field of specific treatment of animals infected with the *bacillus abortus* or suffering from any one of the many different pathological conditions concurrent with the infection. Such work can be attended to more properly and probably more successfully by the private veterinarian.

The Department has frequently been called upon to make examination of animals reported to be affected with a contagious disease, and it has been found that the disease with which the animals may have been affected was not of a con-

tagious nature. Among the diseases found in such instances may be mentioned acute indigestion, cancer, foot rot, forage poisoning, keratitis, lightning stroke, pericarditis and pneumonia. As we are anxious, however, to at all times be thoroughly informed as to the prevalence of contagious disease among our domestic animals it is our custom to promptly investigate all such reports from whomsoever received.

### LABORATORY EXAMINATIONS.

We constantly encourage the submission to this Department of specimens for laboratory examination where contagious disease is suspected, or where for any reason positive diagnosis is necessary and cannot be made by other methods. In addition to the examination of the brains of 63 animals submitted because suspected of rabies and 573 samples of blood taken from animals in our work of glanders control, there have been 92 other specimens submitted to the laboratory for examination and diagnosis. These may be listed as follows under the name of the disease suspected, together with the finding of the laboratory: —

	Positive.	Negative.
Actinomycosis, . . . . .	—	1
Anthrax, . . . . .	3	7
Blackleg, . . . . .	1	1
B. coli, . . . . .	3	—
Cancer, . . . . .	1	—
Cyst-bacterial, . . . . .	1	—
Glanders, . . . . .	6	2
Hemorrhagic septicemia, . . . . .	15	5
Mange, . . . . .	1	—
Necro-bacillosis, . . . . .	4	—
Nodular disease, . . . . .	2	—
Parasitic disease, . . . . .	1	—
Pneumonia, . . . . .	1	—
Tuberculosis, . . . . .	18	13
	57	29
No diagnosis, . . . . .	7	
Awaiting report, . . . . .	3	



The importance and absolute necessity of laboratory examinations in connection with the work of this Department are apparent. These examinations are specially important in connection with diseases which are communicable to the human subject, notably rabies, positive diagnosis of which by clinical symptoms of the suspected animal is often impossible for the reason that in many instances the infected animal is killed before positive clinical symptoms have appeared. In case persons have been bitten by such an animal a diagnosis by laboratory examination becomes necessary for the purpose of determining whether or not preventive inoculation should be administered to the persons bitten. Failure to make diagnosis in such instances might result in the loss of human life. Laboratory investigation in connection with our control work in other contagious diseases is also very necessary to its success and really indispensable at the present day. The laboratory of the State Department of Health has efficiently performed this entire service for us for the greater part of the year, our own laboratory worker who formerly attended to a portion of the work having resigned in June.

#### ANNUAL INSPECTION OF FARM ANIMALS AND PREMISES.

In accordance with sections 14 to 24 of chapter 90 of the Revised Laws and pursuant to an order of the Commissioner issued Jan. 19, 1918, to inspectors of animals of all cities and towns of the Commonwealth, a systematic inspection of all cattle, sheep and swine and the premises on which they are kept was duly made, and a report of the same submitted to this office. The inspector makes a separate report of his visit to each individual premises and leaves a copy of the same with the owner. These reports collectively furnish a comprehensive survey of the health and sanitation of animals kept for the production of food for human consumption; they also furnish the only correct "census" of such animals which is published, and are therefore of considerable interest and value not only to this Department but to many other State departments, different associations and individuals interested in dairying and the marketing of beef, pork or mutton, and to those engaged in general agricultural operations.



A gross tabulation of these reports follows: —

Total number of herds of cattle inspected, . . . . .	29,498
Number of herds containing not over 5 dairy cows, . . . . .	20,708
Number of neat cattle inspected, . . . . .	231,407
Number of dairy cows inspected, . . . . .	151,959
Number of herds found clean and in good condition, . . . . .	28,304
Number of stables inspected, . . . . .	30,359
Number of stables properly drained, . . . . .	30,088
Number of stables well ventilated, . . . . .	29,900
Number of stables sufficiently lighted, . . . . .	29,596
Number of stables found clean, . . . . .	29,167
Number of stables in which improvements were recommended, . . . . .	1,197
Number of herds of swine inspected, . . . . .	12,883
Number of swine inspected, . . . . .	81,652
Number of herds of swine garbage-fed, . . . . .	2,701
Number of swine garbage-fed, . . . . .	46,617
Number of sheep inspected, . . . . .	16,570
Number of goats inspected, . . . . .	1,102

The annual inspection from which the above tabulation was made took place during the spring months of 1918, and at that time there was found an increase in the total number of cattle in the State of 2,445 since the inspection made the previous year, an increase of about 1 per cent. The present total is found to be only slightly below the average total for the years 1901 to 1918. The number of dairy cows decreased during the year by 182, and the present total shows their number to be about 8,000 (5 per cent.) below the average number for the years mentioned.

The above statistics referring to total number of swine are not reliable as showing the actual conditions of the swine-raising industry for the reason that the numbers increase or decrease rapidly on individual premises according as new litters are farrowed or mature animals are shipped to market. The record of the inspector may be made just before or just after one of these happenings and does not therefore reliably indicate the condition as to numbers. The statistics referring to number of herds are, however, a proper basis for deductions. These show that 2,310 more people engaged in swine raising during the year ending in the spring of 1918 than had so engaged the previous year. In my opinion the next annual inspection made

in the spring of 1919 will show this number to have still further increased, and the ratio of increase to be much greater.

The inspectors' records of the number of sheep found on farms show an increase during the year from 13,875 at the 1917 inspection to 16,570 in 1918. On account of the recent increasing interest in sheep raising the total number owned in the State will undoubtedly show a larger proportionate increase at the next inspection.

In connection with a study of the gross tabulation of the reports of annual inspection as made by the local inspectors of different towns and cities of the Commonwealth and by which is shown the large amount of work done by them, reference may very properly be made to the value of this service, if promptly and efficiently performed. In addition to the regular annual inspection of animals and premises which the inspectors are required by law to make they are of very great aid to the Department in other ways. In many instances of an outbreak of contagious disease among animals they are the first officials to be notified, and in such instances the ultimate success of control work by the Department may depend upon their prompt attention to their duty of quarantine and prompt report to office of the Department. Their service in identification and release of animals shipped to Massachusetts under permit, and in supplying information as to violations of regulations applying to interstate traffic, enables us to more promptly attend to the duties necessary in connection with such cases.

Generally speaking, the work of inspectors has been efficiently attended to during the past year. It has had the practical result of correcting unsatisfactory conditions of stabling. Their attention to quarantine duties has been of material aid in our control of outbreak of contagion and in the elimination of diseased animals.

Meetings of inspectors of animals in different sections of the State were called as follows: Boston, November 13; Worcester, November 15; Greenfield, November 19; Pittsfield, November 20; Springfield, November 21.

The total attendance at these meetings was 203. Many discussions took place referring to live-stock conditions, prevalence of contagious disease, duties of inspectors, followed by

suggestions as to improvement of the service. The Department's work during a period of years was shown by means of charts prepared for the purpose and explained by Department officials.

Section 111 of chapter 75 of the Revised Laws, as amended by chapter 243 of the Acts of 1907, requires rendering companies to report to this Department every animal received by them which is found to be infected with a contagious disease, and the information thus furnished is of value in bringing to the attention of the Department occasional cases of these diseases which otherwise would not be known. A table of reports of rendering companies follows:—

*Reports of Rendering Companies.*

RENDERING COMPANIES.	Number of Reports.	Number of Cases of Glanders.	Number of Cases of Tuberculosis.	Number of Cases of Glanders not previously reported.	Number of Cases of Tuberculosis not previously reported.	Number of Cases of Actinomycosis.	Number of Cases of Rabies.
W. H. Abbott, Holyoke, . . .	1	1	-	-	-	-	-
L. B. Darling Fertilizer Company, Pawtucket, R. I.	1	-	-	-	1	-	-
Fitchburg Rendering Company, .	2	-	4	-	-	-	-
Home Soap Company, Millbury, .	10	1	12	-	1	-	-
Lawrence Rendering Company, .	1	-	1	-	-	-	-
Lowell Rendering Company, . .	11	1	14	-	-	-	-
A. G. Markham, Springfield, . .	1	1	-	-	-	-	-
James E. McGovern, Andover, .	7	6	1	-	-	-	-
Muller Brothers, Cambridge, . .	14	36	-	-	-	-	-
New Bedford Extractor Company,	3	4	-	-	-	-	-
New Bedford Tallow Company, .	1	-	-	-	-	1	-
New England Rendering Company, Brighton.	15	29	2	-	-	-	-
Parmenter & Polsey Fertilizer Company, Peabody.	2	-	2	-	-	-	-
N. Roy & Son, South Attleborough,	5	-	6	-	-	-	3
N. Roy, Jr., Fall River, . . .	13	3	17	-	-	-	-
Springfield Rendering Company, .	4	3	1	-	-	-	-
N. Ward Company, Boston, . . .	22	89	-	1	-	-	-
Whitman & Pratt Rendering Company, North Chelmsford.	1	1	-	-	-	-	-
Worcester Rendering Company, .	2	2	-	-	-	-	-
Totals, . . . . .	116	177	60	1	2	1	3

NOTE. — All the above cases are included in statistics occurring elsewhere in this report.



For several years, at the request of the United States Department of Commerce and Labor, a report of the receipts of all live stock at Boston has been sent to Washington each month. The following table shows the receipts by months for the past year: —

*Receipts of Live Stock at the Stockyards in Boston and Vicinity for Twelve Months ending Nov. 30, 1918.*

FOR MONTH OF —	Cattle.	Calves.	Sheep.	Swine.	Horses.
December, . . . . .	9,766	10,306	12,298	135,167	1,157
January, . . . . .	9,265	13,236	12,571	142,496	1,613
February, . . . . .	7,823	13,310	10,778	92,930	1,830
March, . . . . .	8,086	23,304	8,112	122,912	2,085
April, . . . . .	10,781	39,400	15,619	176,192	2,830
May, . . . . .	7,181	25,217	13,257	129,784	2,375
June, . . . . .	8,550	16,950	16,648	89,859	1,500
July, . . . . .	10,283	18,987	28,629	114,866	803
August, . . . . .	9,833	13,083	22,966	63,375	1,195
September, . . . . .	13,866	17,104	32,126	45,189	919
October, . . . . .	19,400	17,753	27,199	47,889	794
November, . . . . .	20,331	18,515	44,040	109,367	777
Totals, . . . . .	135,165	227,165	244,243	1,270,026	17,878

FINANCIAL STATEMENT.

Appropriation for the personal services of the Commissioner, clerks and stenographers and office assistants, chapter 106, Special Acts of 1918, . . . . .	\$10,700 00
Expenditure during the year for the following purposes: —	
Personal services of the Commissioner, . . . . .	\$3,500 00
Personal services of clerks and stenographers, . . . . .	6,835 35
Extra clerical and stenographic service, . . . . .	63 70
Total expenditure, . . . . .	\$10,399 05
Unexpended balance, . . . . .	300 95
	\$10,700 00
Appropriation for services other than personal, printing the annual report, traveling expenses of the Commissioner, and office supplies and equipment, chapter 106, Special Acts of 1918, . . . . .	\$4,200 00
Brought forward from 1917 appropriation, . . . . .	45 89
Total amount appropriated, . . . . .	\$4,245 89



## Expended during the year for the following purposes:—

Books, . . . . .	\$96 06
Express and messenger service, . . . . .	177 64
Postage, . . . . .	931 27
Printing report, . . . . .	164 92
Other printing, . . . . .	1,039 94
Telephone and telegrams, . . . . .	650 47
Stationery and office supplies, . . . . .	529 54
Typewriter, . . . . .	90 00
Expenses of the Commissioner, . . . . .	438 95
Sundries, . . . . .	19 12

Total expenditure, . . . . .	\$4,137 91
Unexpended balance, . . . . .	107 98

\$4,245 89

Appropriation for the personal services and reimbursements for traveling expenses for veterinarians and agents engaged in work of extermination of contagious diseases among domestic animals, chapter 106, Special Acts of 1918, . . . . .

Amount forwarded from extraordinary expenses, . . . . .	\$62,000 00
	337 64

Total amount appropriated, . . . . . \$62,337 64

## Expended during the year for the following purposes:—

Services of regular agents, . . . . .	\$30,667 66
Services of <i>per diem</i> agents, . . . . .	12,020 00
Labor hired, . . . . .	272 59
Traveling expenses of agents, . . . . .	19,377 39

\$62,337 64

Appropriation for the reimbursement of owners of cattle and horses killed, traveling expenses when allowed to inspectors of animals, incidental expenses of killing and burial, quarantine and emergency services, and for laboratory and veterinary supplies and equipment, chapter 106, Special Acts of 1918, . . . . .

\$74,000 00

## Expended during the year for the following purposes:—

873 head of cattle condemned and killed on account of tuberculosis in 1912, 1916, 1917, 1918, paid for in 1918, . . . . .	\$34,224 41
184 horses condemned and killed on account of glanders and farcy in 1915, 1917, 1918, paid for in 1918, . . . . .	9,321 00
Expenses of killing and burial, . . . . .	55 50
Ear-tags, punches, etc., . . . . .	2,439 40
Laboratory and experimental expenses and supplies, . . . . .	3,374 49
Expenses of travel allowed inspectors of animals, . . . . .	501 09
Quarantine expenses, . . . . .	63 40
Laundry, . . . . .	340 54
Rent of quarantine office, . . . . .	80 00
Sundries, . . . . .	208 05

Total expenditure, . . . . .	\$50,607 88
Unexpended balance, . . . . .	23,392 12

\$74,000 00

The average price paid for condemned cattle for the year was \$37.53.

There has been received during the year from the sale of hides and carcasses of condemned animals \$454.18, and for the testing of cattle for nonresident owners \$3,344, a total amount of \$3,798.18.

Claims for 77 head of cattle condemned and killed as tuberculous during the year remain unsettled, to be paid for on proof of claims, the appraised value of which amounts to \$2,806.50.

Claims for 11 horses condemned and killed during the year because deemed to be affected with glanders remain unsettled, to be paid for on proof of claims, the allowance for which under the law will amount to \$650.

Respectfully submitted,

LESTER H. HOWARD,  
*Commissioner.*













